The chief additional facts may be summarized as follows:—The fungi remove large quantities of carbon, nitrogen, and especially phosphoric acid and potash, from the soil. The soil inside the ring contains less nitrogen than that under the ring, and this again less than the soil outside the ring; a gradual exhaustion of nitrogen, then, is taking place as the fungus and rank grass extend the ring centrifugally, and this is promoted by the removal of the grass.

These observers also demonstrated the spread of the mycelium: it is in greatest abundance just below the outer edge of the ring. They conclude that the fungus has powers of obtaining nitrogen from compounds in the soil which are not available to the roots of the green herbage, but after the decay of the fungus mycelium the grasses can avail themselves of part of the nitrogen. The grasses—being plants containing chlorophyll—of course obtain their carbon from the carbon dioxide of the atmosphere; but the fungus—equally of course, in the light of physiology—obtains its carbon from some organic substances in the soil. The accumulation of phosphoric acid and potash has already been accounted for.

We may now sum up, then, the rational explanation of these curious fairy-rings as follows.

A mushroom spore may be supposed to start its growth in or beneath the dung of cattle, or a bird, on poor soil; the first crop of mushrooms, produced from the mycelium to which the spore gave rise, exhausts the soil of available carbon, nitrogen, phosphorus, potash, and other substances, storing all it can get in its own substance. The mycelium extends centrifugally "into fresh fields and pastures new," and the next crop of mushrooms arises at a distance from the centre; and so the growth proceeds. The grasses, among the roots of which this extension is going on, now avail themselves of the rich manure afforded by the decomposition of the older mycelium, and a struggle for existence is set up which results in the victory of the coarsest and rankest-growing species. These in their turn exhaust the available supply, and if cut it is removed in their substance: no wonder, then, that the inner parts of the area are poor, and support little or no herbage.

Messrs. Lawes and Gilbert's researches also showed that if the growth of the herbage is promoted by means of manures containing much available nitrogen the fungi are found to suffer, and the "fairy-ring" may be brought to an end. Again, unfavourable seasons of drought may cause the death of the mycelium, and rings which have flourished for years be thus destroyed.

We have attempted in this article to give a complete explanation of the rise and progress of "fairy-rings," as afforded by modern science. That much is clear which was previously obscure will have to be conceded; but are all the facts covered by the explanation? There are some inquiring spirits who are never satisfied with an explanation, and we run the risk of being classed among these malcontents, but there are one or two curious little points which still obtrude themselves upon our attention.

There is, in the first place, some difficulty in realizing how the fungi manage to obtain their large supplies of carbon and nitrogen and other elements from poor shallow soil, in the absence of larger quantities of organic matter than may occur: there is, in fact, considerable difficulty about the whole question of the nutrition of the fungus. A second point is that we find the ultimate filaments into which the mycelium of the fungus breaks up becoming lost among the roots of the grasses; and if the latter are carefully washed and examined with the microscope, their fibrils and root-hairs can be seen to be infolded by delicate hyphæ, and in some cases the root-hairs are pierced by them. We do not know that this has been demonstrated before, but we find it the rule with *Marasmius*, and have already succeeded in detecting something of the kind in other forms.

Now this looks very like parasitism; and we are tempted to pause before accepting the last explanation of fairy-rings as conclusive, or covering all the facts. It may be, in fact, that the hyphæ of the fungus stimulate the roots of the grasses to increased activity: this would account for the rampant growth and the result of the struggle for existence. Subsequently the hyphæ kill the grass-roots—or at any rate those of some species—which accounts for the bare patches in some rings. It also easily explains the sources of the carbon and nitrogen, if the hyphæ absorb nutritive materials from the hard-working grass-roots. This being the case, fairy-rings become still more interesting, since they afford an illustration of symbiosis of a peculiar kind, at any rate during part of the time that the grass and the fungus are in contact; and it seems not improbable that the theory of the formation of fairy-rings will have to be modified somewhat as follows.

A fungus-spore starts its mycelium among the roots of the grasses, and the hyphæ obtain a hold on some root-hairs and fibrils; the mycelium thus parasitic on the roots reacts in a stimulating manner on the latter, and we have a symbiotic relationship established between the fungus and the host. The consequence is that both flourish, and become rampant. It may be that only some grasses are thus stimulated, or even attacked, and this will affect their struggle for existence, and result in the selection of a few coarse forms. In time the hyphæ or the roots get the upper hand, and this is expressed in the survival of the grass, or its decay; in some cases it is clear that hyphæ are living at the expense of dead and dying roots.

However, until the results of investigations at present going on are set forth more at length, it is impossible to say which of the above explanations is the true one; in any case, the attachment of fungus hyphæ to the living grass-roots needs explanation, and it must also be allowed that at present we have no satisfactory theory to account for the nutrition of these rampant mycelia. But this is not the place to do more than point out how interesting the subject is, and how promising a field for further research it offers.

NOTES.

MR. W. BATESON, Fellow of St. John's College, Cambridge, who has just returned from a zoological expedition to Central Asia, and is well known for his researches on *Balanoglossus*, has been awarded the Balfour Memorial Studentship in Animal Morphology.

THE second meeting of the newly-formed Anatomical Society of Great Britain and Ireland will be held on Tuesday, November 22, at University College, Gower Street, at 5 p.m. The following papers will be read:—Prof. Sir William Turner, F.R.S., (1) "Variations in the Hippocampus Major and Eminentia Collateralis," by Robert Howden, and (2) "A Metallic Body in the Spinal Canal," by David Hepburn; (3) "Minute Anatomy of Clarke's Column in Spinal Cord of Man, the Monkey, and the Dog," by Dr. Mott; (4) "The Arteries at the Base of the Brain," by Prof. Bertram C. A. Windle; (5) "Note on the Functions of the Sinuses of Valsalva and Auricular Appendices, with some Remarks on the Mechanism of the Heart and Pulse," by Mayo Collier. A number of interesting exhibits are also announced.

ON Tuesday evening the second part of an important paper upon the causes of accidents in mines and the development of measures and applications for combating or avoiding them was read by Sir Frederick Abel at the Institution of Civil Engineers. The first part of the paper was read in May last, at the close of the session. Sir Frederick's ideas will be discussed at the meeting of the Institution next Tuesday.

WE are glad to hear that the Scottish University Extension Scheme is likely to prove successful. A brilliant start has been made in Perth, where Dr. H. R. Mill is giving a course of lectures on physiography to a class of over 240 students.

SOME time ago it was arranged that three lectures on "Heredity and Nurture" should be delivered at the South Kensington Museum, on behalf of the Anthropological Institute, by Mr. Francis Galton, President of the Institute. We are requested to state that these lectures have been postponed in consequence of Mr. Galton's indisposition.

PROF. J. McK. CATTELL'S paper on "The Psychological Laboratory at Leipzig," to be read before the Aristotelian Society on the 21st, will contain an account of the aim of experimental psychology, of the Leipzig Laboratory, and of the researches which have been carried on and are being carried on in it. The paper will be published in the January number of *Mind.*

THE borings in the Delta of the Nile carried on by the Royal Society have been brought to a standstill by the breaking of the pipe. The depth reached is over 324 feet, still without the solid rock being found. It is possible that the work may be recommenced upon a larger scale.

SEVERAL years ago three Russian "lady doctors" started at Tashkend a consulting hospital for Mussulman women. From the beginning the experiment proved a success, and the popularity of the hospital has been increasing ever since. During the last twelve months no fewer than 15,000 consultations have been given.

THE Russian Consul at Kashgar writes to the Russian Geographical Society that his endeavours to obtain from the Chinese authorities permission to erect a memorial to Adolf Schlagintweit on the very spot where Schlagintweit was killed have not been successful. The memorial will be erected in the Russian cemetery, where it will be at least protected from injuries.

THE money necessary for sending out M. Wilkitski to make pendulum observations in Novaya Zemlya has been granted by the Russian Geographical Society. He will be accompanied by a naturalist, M. A. Grigorieff.

THE Moscow Society of Naturalists invites those scientific bodies which would like to receive, in return for their own publications, the series of the Moscow *Bulletin,* to communicate with the Secretary of the Society.

REPORTS from Bergen, in Norway, seem to indicate that another great rush of herring under the west coast may be expected this winter, similar to those which have taken place periodically during the last two centuries through some unknown cause. The two greatest rushes on record were those of 1740 and 1807.

DURING a hailstorm at Mors, in Denmark, a few days ago, a flash of forked lightning—the only one occurring—struck a farm, and, having demolished the chimney-stack and made a wreck of the loft, descended into the living-rooms on the ground-floor below. Here its career appears to have been most extraordinary; all the lime work around doors and windows having been torn down, and the bed-curtains in the bed-rooms rent to pieces. An old Dutch clock was smashed into atoms, but a canary and cage hanging a few inches from it were quite uninjured. The lightning also broke sixty windows and all the mirrors in the house. On leaving the rooms it passed clean through the door into the yard, where it killed a cat, two fowls, and a pig, and then buried itself in the earth. In one of the rooms were two women, both of whom were struck to the ground, but neither was injured.

THE last two numbers of the *Folk-Lore Journal* (vol. v. Parts 3 and 4) exhibit very varied fare, and show how this interesting Society is gradually embracing the whole world. Side by side with Miss Courtney's Cornish folk-lore, we have Mr. Mitchell-Linne's birth, marriage, and death rites of the Chinese, followed by the indefatigable Mrs. Murray-Aynsley's account of secular and religious dances in Asia and Africa, which extends over both numbers, and in Part 3 is succeeded by Mr. Clouston's two Pacific folk-tales. Folk-lore amongst the Somali tribes follows that of British Guiana, and is succeeded by Cornish, Irish, Malay, and North Friesland tales. Dr. Gaster's paper, in the same part, on the modern origin of fairy-tales, is a very suggestive one. Its conclusion, after an examination of certain examples, which "can be infinitely multiplied," is "that the literature of romance and novel, be it a religious romance or one of chivalry, has passed nowadays to a great extent into the literature of fairy-tales, and that, far from being the basis, the fairy-tales are the top of the pyramid formed by the lore of the people. They are the outcome of a long *literary* influence, as well as an oral one, which was exercised upon the mind and soul of the people during centuries." What may be called the editorial matter—the notes, news, &c.—is of the usual varied and interesting character.

SIR D. SALOMON'S little work on accumulators, issued by Messrs. Whittaker and Co., has passed rapidly through two editions. A third and much improved edition, with many illustrations in the text, will be ready shortly.

WE have received the first instalment of what promises to be an important book, "Die Elektricität des Himmels und der Erde," by Dr. Alfred Ritter von Urbanitzky. The complete work will contain about 400 illustrations, including several coloured plates. The publisher is A. Hartleben, Vienna.

WE have received the first number of the *American Journal of Psychology*, edited by Prof. G. S. Hall. The object of this periodical, as the editor explains, is to record psychological work of a scientific, as distinct from a speculative, character. The present number contains, besides reviews and notes, articles on the following subjects: the variations of the normal knee-jerk and their relation to the activity of the central nervous system, by Dr. W. P. Lombard; dermal sensitiveness to gradual pressure-changes, by Prof. G. S. Hall and Mr. Y. Motoro; a method for the experimental determination of the horopter, by Christine Ladd-Franklin; and the psycho-physic law and star magnitudes, by Dr. J. Jastrow.

SIX Bulletins of the United States Geological Survey, Nos. 34–39, have been sent to us. The subjects are: on the relation of the Laramie Molluscan fauna to that of the succeeding fresh-water Eocene and other groups, by Dr. C. A. White; physical properties of the iron-carburets, by Mr. C. Barus and Mr. V. Strouhal; the subsidence of fine solid particles in liquids, by Mr. C. Barus; types of the Laramie flora, by Mr. L. F. Ward; peridotite of Elliott County, Kentucky, by Mr. J. S. Diller; and the upper beaches and deltas of the glacial Lake Agassiz, by Mr. W. Upham.

IN a paper which has just been reprinted from the Transactions of the New York Academy of Sciences, Mr. J. S. Newberry maintains that the decorative ideas expressed in the monuments of the ancient inhabitants of Central America have a close resemblance to the carvings executed by the Indians of the north-western coast of America, and by the people of the Pacific Islands. "Hence," says Mr. Newberry, "I am inclined to believe, as has been suggested by Baldwin, that the seeds of this ancient civilization were brought from the East Indian Archipelago from island to island across the Pacific, and that finally reaching our continent, and prevented by the great and continuous chain of the Cordilleras from further eastward migration, it slowly spread southward to Chili, and northward to our western territories."

FIVE years ago the increase of wolves in France had become so serious that the Government found it necessary to raise the awards for killing them. In 1882, 423 wolves were killed; in 1883, 1316; in 1884, 1035; in 1885, 900; and in 1886, 760. The awards are now 200 francs for the killing of a wolf which has attacked human beings; 150 francs for one in young; 100 francs for a male wolf, and 40 francs for a cub.

IN the current number (vol. i. No. 4) of the Journal of the Pekin Oriental Society, the well-known scholar Dr. Edkins writes on local value in Chinese arithmetical notation. The principle of local value is used in Chinese commerce, strokes being used instead of special symbols for 1, 2, 3, &c., the relation of the strokes to each other showing the value of the symbol. The abacus, with its upright strings and balls, is only a help to calculation, and does not contain any new principle. Dr. Edkins describes calculating slips which have been in use in China from the most ancient times. It is curious to notice that the principle of local value adopted by the Chinese was from left to right as with ourselves. The slips here mentioned, in which local value played an important part, had been in use fourteen centuries and probably more, when in the fourteenth century the abacus was introduced. Dr. Edkins assigns the origin of the principle of local value to the Babylonians, for several reasons. The first Chinese example known to us is dated B.C. 542, while in the sixteenth century B.C. the Babylonians could extract the cube and square roots of numbers: the Hindoos do not seem to have been proficients in mathematics at so early a date as B.C. 542; so that the probability is the principle of local value in arithmetical notation found its way to China through the Phœnician traders. The Chinese, in fact, acquired it where they acquired a knowledge of the clepsydra, the dial, astronomy, and astrology.

THE creation of provincial museums in Eastern Siberia is progressing very favourably. The example given by the Minusinsk Museum has been followed at Yeniseisk, and will be followed at several other towns. The Minusinsk Museum has now 4000 specimens of plants, 2000 of animals, and 1500 of minerals. The anthropological department has numerous models of huts and houses of the Russian and native population. The archæological collection is especially interesting; it contains 218 implements of the Stone Age, 1260 of the Bronze Age, and 1850 of the Iron Age. There is, moreover, a collection of implements used in, and produced by, local domestic trades. The whole is described in a good catalogue. Last year the Museum was visited by 8000 persons.

TWO bones which were found some time ago at Pitchery Creek, Central Queensland, attracted the attention of several persons interested in science. They were lately exhibited at a meeting of the Royal Society of New South Wales, and Mr. Etheridge explained that they were portions of the vertebral column of an extinct reptile, *Plesiosaurus*. From the transverse elongation of the portions preserved, the bones partook more of the facies of the Plesiosauri of the Cretaceous group than of those found in the Lower Mesozoic deposits.

DR. SCHWERIN, who was despatched last year by the Swedish Government to the Congo, in order to ascertain whether that place was suitable for the establishment of a Swedish colony, and to make scientific researches, has returned to Sweden with good results. He also reports having made an interesting discovery at the mouth of the river, viz. the marble pillar or *padro* erected here by Diego Cam in 1484, the first Portuguese traveller who reached the Congo. The Portuguese were in the habit of raising such *padroes*, bearing the arms of Portugal, in prominent places on the West Coast of Africa, when taking possession of territory, and it was known that one had been erected by Cam at the mouth of the Congo, but it was believed that it had been destroyed. However, Dr. Schwerin, having worked out a theory of his own, searched for this ancient monument some 6 miles further inland than the position indicated on English charts, viz. Point Padro, and here he found it. Dr. Schwerin is preparing an exhaustive account of his work on the Congo, at the expense of the Swedish Government.

AN electric railway for the dinner-table is one of the recent achievements of French ingenuity (*La Nature*, October 29). It makes the presence of servants unnecessary. The train, which runs on a line along either side of the table before the diners, consists of a platform pivoted on two bogies, one of which carries the motor, while the other is merely a supporting truck. The expenditure of electric energy is but slight, and the train is said to be thoroughly under control of the host.

THERE has been much speculation as to how the ancient Egyptians managed to erect their enormous monoliths, sometimes 100 feet in height and weighing hundreds of tons. An interesting recent article in the *Revue Scientifique*, by M. Arnaudeau, offers the explanation that water was employed. Round the obelisk, lying horizontally, with the base towards the pedestal, was raised a circular inclosure, of height equal to that of the monolith. This latter had pieces of wood, or other floats, fitted to it, especially at the upper part; so that when water was brought into the inclosure, the obelisk rose gradually to the vertical. The process may be simply imitated by introducing the end of a screw nail into a piece of cork, putting it in a basin, and then introducing water.

THE pulverizing of minerals for analysis often consumes much time, requiring, as it does, great care. A mill for the purpose, constructed on the model of the wet mill in porcelain work, has been recently brought before the Berlin Chemical Society by Herr Zulkowsky (*Berichte*, October 24). The grinding-surfaces are both agate, and the circular runner, on a vertical axis, has a sector cut out of it, and one edge of this rounded. The mill is driven by water-power, a pressure of two to three atmospheres being sufficient.

IN a paper on colour-blindness, contributed to vol. v. Part 2, of the Proceedings of the Bristol Naturalists' Society, Prof. W. Ramsay suggests that the particular defect which causes colour-blindness may lie in the brain, not in the eye. Certain persons, he points out, are incapable of judging which of two musical tones is the higher, even when they are more than an octave apart. Yet such persons hear either tone perfectly; the defect is not one of deafness. "It must be concluded," says Prof. Ramsay, "that in such a case the brain is the defaulter. And it may equally well be the case that the inability to perceive certain colours is not due to a defect in the instrument of sight—the eye, but to the power of interpreting the impressions conveyed to the brain by the optic nerve. If this is the case, the problem is no longer a physical one: it falls among those with which the mental physiologist has to deal."

A SUPPLEMENTARY mail has just arrived from Iceland, from which we learn that in spite of the ice which has blockaded the eastern and northern shores of the island there has been a good summer and autumn inland, and the harvest has been above the average. However, on the east coast the ice did not disappear till the middle of September, and on the north coast it has not remained so long as during this summer since 1846, and even then the ice-masses were far smaller than this year. In spite of this the weather has been unusually warm inland. Dr. Th. Thoroddsen, the well-known Iceland explorer, has been travelling in the north-western peninsula this year. The fisheries have entirely failed this autumn on the north and east coast, on account of the drift-ice, but they have been good on the south coast.

THE additions to the Zoological Society's Gardens during the past week include a Mongoz Lemur (*Lemur mongoz* ♂), an Olive-gray Lemur (*Hapalemur olivaceus*) from Madagascar, presented by Capt. J. Bonnerville; an Anubis Baboon (*Cynocephalus anubis*); an Angolan Vulture (*Gypohierax angolensis*) from West Africa, presented by Capt. Augustus Kent; a Peregrine Falcon (*Falco peregrinus*), European, presented by Mr. J. G. Keulemans; a —— Scops Owl (*Scops* ——) from Baltcitan, Himalayas, presented by Mr. John H. Leech, F.Z.S.; two Rough-scaled Zonures (*Zonurus cordylus*) from Robben Island, South Africa, presented by Mr. W. K. Sibley.

OUR ASTRONOMICAL COLUMN.

THE ASTRONOMICAL SOCIETY OF FRANCE.—The science of astronomy has become so increasingly popular in France within the last few years, and Frenchmen have done so much to aid its progress that there is ground for wonder that hitherto there has been no Society in France explicitly devoted to its interests. Such a Society, on lines very similar to those of our own Royal Astronomical Society, has at length been founded, and its first meeting was held on October 12, M. Camille Flammarion, the President, being in the chair. MM. Paul and Prosper Henry, General Parmentier, and M. E. L. Trouvelot are the Vice-Presidents; and MM. Gérigny and Gunziger the Secretaries; whilst Dr. Lescarbault, M. G. Secretan, and M. Ch. Trépied are amongst the members of Council. At the first meeting, M. Trouvelot read a paper on a remarkable double shadow of the first satellite of Jupiter, observed by him in 1877 when at Cambridge, U.S.; and M. Ch. Mousette exhibited a fine photograph of a sunspot, and some large-scale photographs of portions of the solar spectrum.

THE LICK OBSERVATORY.—The *Sidereal Messenger* for the current month states that Mr. E. E. Barnard, of Nashville, Tenn., and Mr. J. M. Schaeberle, of the Ann Arbor Observatory, both well known for their cometary discoveries, have been appointed as astronomers at this Observatory.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 NOVEMBER 20-26.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on November 20

Sun rises, 7h. 29m.; souths, 11h. 45m. 44·8s.; sets, 16h. 3m.: right asc. on meridian, 15h. 42·4m.; decl. 19° 42′ S. Sidereal Time at Sunset, 20h. 0m.

Moon (at First Quarter November 22, 11h.) rises, 12h. 15m.; souths, 16h. 43m.; sets, 21h. 18m.: right asc. on meridian, 20h. 41·0m.; decl. 17° 52′ S.

Planet.	Rises.	Souths.	Sets.	Right asc. and declination on meridian.	
	h. m.	h. m.	h. m.	h. m.	° ′
Mercury..	6 48 ...	11 22 ..	15 56 ...	15 18·5 ...	16 56 S
Venus ...	3 1 ...	8 48 ...	14 35 ...	12 44·5 ...	3 22 S.
Mars ...	1 6 ...	7 35 ...	14 4 ...	11 30·9 ...	5 1 N.
Jupiter ...	6 34 ...	11 10 ...	15 46 ...	15 6·7 ...	16 36 S.
Saturn ...	20 53* ...	4 40 ...	12 27 ...	8 36·1 ...	19 0 N.
Uranus ...	3 27 ...	9 2 ...	14 37 ...	12 58·2 ...	5 31 S.
Neptune.	15 8 ...	23 49 ...	7 30* ...	3 47·4 ...	18 10 N.

* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

Occultations of Stars by the Moon (visible at Greenwich).

Nov.	Star.	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image.
			h. m.	h. m.	° °
20 ...	B.A.C. 7202 ...	6 ...	16 46 ...	18 2 ...	124 279
20 ...	B.A.C. 7209 ...	6½ ...	17 35 ...	18 32 ...	159 259
20 ...	19 Capricorni ...	6 ...	20 30 ...	21 30 ...	114 347

Nov.	h.	
21 ...	1 ...	Mercury at least distance from the Sun.
21 ...	6 ...	Neptune in opposition to the Sun.
24 ...	10 ...	Venus in conjunction with and 1° 6′ north of Uranus.
26 ...	23 ...	Mercury stationary.

Variable Stars.

Star.	R.A.	Decl.			
	h. m.	° ′		h. m	
U Cephei	0 52·3 ...	81 16 N. ...	Nov. 22,	1 48	*m*
R Arietis	2 9·7 ...	24 32 N. ...	,, 25,		*m*
λ Tauri...	3 54·4 ...	12 10 N. ...	,, 25,	5 40	*m*
U Ophiuchi	17 10·8 ...	1 20 N. ...	,, 22,	5 27	*m*
			and at intervals of	20 8	
β Lyræ...	18 45·9 ...	33 14 N. ...	Nov. 22,	6 0	*m*
η Aquilæ	19 46·7 ...	0 43 N. ...	,, 24,	22 0	*M*
S Sagittæ	19 50·9 ...	16 20 N. ...	,, 22,	19 0	*m*
			,, 25,	19 0	*M*
δ Cephei	22 25·0 ...	57 50 N. ...	,, 20,	21 0	*M*

M signifies maximum; *m* minimum.

Meteor-Showers.

	R.A.	Decl.	
The Andromedes ...	24° ...	44° N. ...	Very slow; with trains.
Near μ Ursæ Majoris.	155 ...	40 N. ...	Swift; streaks.

GEOGRAPHICAL NOTES.

THE Owen Stanley Range of New Guinea, which has been so long known at a distance, has at last been ascended. Mr. E. H. Martin, of Queensland, in August last, reached the summit of the range, which he found to be 13,205 feet high. He reports the north side of the range to be a paradise with great tree-ferns, palms, and other magnificent tropical vegetation. Mr. W. R. Cuthbertson, the leader of the Australian Geographical Society's Expedition, started for Port Moresby on July 20 last, with Mr. G. Hunter as interpreter. Mr. Cuthbertson has not yet succeeded in ascending to the highest point of the Owen Stanley Range, as he intended, but ascended Mount O'Bree, 10,240 feet.

IN No. xi. of *Petermann's Mitteilungen*, Dr. Paulitschke describes Captain Stuart King's journey into the country of the Ejssa and Gadaburssi Somali, some 70 miles to the south of Zeyla, in 1886. The paper is accompanied by a map. Dr. von Jhering and P. Langhans conclude their long and elaborate memoir on the southern colonial region of Rio Grande do Sul. Dr. Hans Schinz, who has been so long in the Lake Ngami region, criticizes severely Mr. Farini's narrative of his journey to the Kalahari Desert, the conclusion being very adverse to the trustworthiness of Mr. Farini's narrative. Perhaps the most important contribution to this number is a beautiful map of the Russo Afghan frontier region, based upon the work of Colonel Holdich's Commission. It is remarkable that while Colonel Holdich's work is carefully locked up in the India Office as "confidential," so far as English geographers are concerned, it should be accessible to the geographers of other countries.

HERR KRAUSE has returned to the German settlement of Togo, on the Gold Coast, from his journey from Salaga through Dahomey. He has collected from 600 to 800 specimens of plants and seeds, a large number of insects, and numerous specimens of prehistoric articles found between Mosi and Timbuktu.

THE principal paper in the third part of this year's *Bulletin* of the Paris Geographical Society is an account of a journey made in 1881 by Count de Chavagnac, from Fez to Morocco, north-east to Mekenessa, and eastwards across the numerous wadis that run south into Wed Mellouja, and as far as Ajda. There is also a paper containing a good deal of useful information, and accompanied by an excellent map, on the ports of Tonquin, by M. J. Renaud. M. Dutreuil de Rhins concludes his useful summary of our knowledge of Eastern Tibet.

THE session of the Royal Geographical Society began on Monday, with a paper on Siam, by Mr. J. McCarthy, Superintendent of Surveys in Siam. Mr. McCarthy has been at work for seven years on the survey of Siam, and some of the results he described in his paper, and embodied in the map by which